REMARKS

Applicants appreciate the thorough review of the present application as reflected in the Official Action mailed December 14, 2004. Applicants have amended Claim 1 to incorporate the recitations of Claim 9 and have cancelled Claim 9. Applicants have amended Claims 11 to 13 to incorporate method recitations. Applicants have cancelled Claim 16-20.

The IDS

Applicants wish to bring to the attention of the Examiner an Information Disclosure Statement (IDS) that is being filed concurrently with the present Amendment.

The Restriction Requirement

Applicants confirm the election without traverse of the Invention I claims and have cancelled the non-elected Invention II claims.

The Claim Objections

Claims 11-13 are objected to as there are no additional method steps in Claims 11-13. Applicants have amended Claims 11-13 to recite method steps corresponding to the recitations of these claims. Applicants note, however, that these claims are method claims, not device claims. Thus, the Patent Office not considering device claims to be limited by process recitations in a product-by-process claim is inapplicable to these claims. In any event, Applicants submit that the objection to Claims 11-13 has been overcome.

The Anticipation Rejections

Claims 1-7, 11 and 14 stand rejected as anticipated under 35 U.S.C. § 102(b) by United States Patent No. 5,183,781 to Nakano (hereinafter "Nakano"). Applicants have incorporated the recitations of Claim 9 into Claim 1 and, therefore, Applicant submit that the rejection based on Nakano has been obviated.

Claims 1-3, 8, 11, 12 and 14 stand rejected as anticipated under 35 U.S.C. § 102(e) by United States Patent No. 6,642,620 to Sharan *et al.* (hereinafter "Sharan").

In light of the amendments discussed above, Applicants submit that the rejection of Claims 1-3, 8, 11 and 14 has been obviated by amending Claim 1 to incorporate the recitations of Claim 9. Accordingly, Applicants submit that the anticipation rejection based on Sharan has been obviated.

The Obviousness Rejections

Claims 4 and 13 stand rejected as obvious under 35 U.S.C. § 103 in light of Sharan and United States Patent No. 4,898,841 to Ho (hereinafter "Ho"). Claim 15 stands rejected as obvious under 35 U.S.C. § 103 in light of Nakano and United States Patent No. 6,509,263 to Park et al. (hereinafter "Park"). Applicants submit that these claims are patentable at least as depending from a patentable base claim.

Claims 9 and 10 stand rejected as obvious under 35 U.S.C. § 103 in light of Sharan as applied to Claim 3. With regard to Claim 9, these recitations have been incorporated into Claim 1 and, therefore, Applicants will address the rejection of Claim 9 with reference to amended Claim 1. As recited in amended Claim 1, the doping is carried out "under a chamber pressure of from about 6×10^{-2} to about 6×10^{-4} Torr." However, Sharan expressly states that the doping plasma is carried out at 1-5 Torr. See Sharan, col. 3, lines 29-32 and col. 5, lines 54-56. As such, the cited reference does not disclose each of the recitations of amended Claim 1.

Furthermore, there is no motivation or suggestion to modify Sharan as suggested in the Office Action. The Official Action acknowledges that Sharan does not disclose the pressures recited in Claim 1 but asserts that such pressures are obvious and would result from optimization. Official Action, p. 7. However, as affirmed by the Court of Appeals for the Federal Circuit in *In re Sang-su Lee*, a factual question of motivation is material to patentability, **and cannot be resolved on subjective belief and unknown authority**. *See In re Sang-su Lee*, 277 F.3d 1338 (Fed. Cir. 2002). It is improper, in determining whether a person of ordinary skill would have been led to this combination of references, simply to "[use] that which the inventor taught against its teacher." *W.L. Gore v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 U.S.P.Q. 303, 312-13 (Fed. Cir. 1983).

The Official Action states:

> [R]egarding claims 9 and 10, one having ordinary skill in the art would have been able to, by routine experimentation, optimize the pressure and time for a desired dopant profile. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to optimize the chamber pressure and dopant exposure time in order to achieve the desired dopant profile. The particular parameters of pressure and time (claims 9 and 10 respectively) are obvious result-effective variables, i.e., variables which achieve a recognized result (i.e. the amount of time the dopant is supplied with a particular chamber pressure would yield a particular profile), hence workable ranges of said variable might be characterized as routine experimentation.

See Office Action, pp. 7-8. This motivation is a motivation based on "subjective belief and unknown authority", the type of motivation that was rejected by the Federal Circuit in *In re Sang-su Lee*. In other words, the Official Action does not point to any specific portion of the cited references that would induce one of skill in the art to modify the cited reference as suggested in the Official Action. Accordingly, the statement in the Official Action with respect to motivation does not adequately address the issue of motivation to combine as discussed in *In re Sang-su Lee*.

Furthermore, the reference itself teaches away from the claimed pressure range for the dopant plasma. In particular, Sharan incorporates by reference U.S. Patent Application Serial No. 09/360,292 as describing the hydrogen plasma cleaning procedure. Sharan, col. 4, lines 5-8. This application appears to have common inventors and been published as U.S. Patent Publication No. 2003/0015496 (hereinafter "the '496 publication"). The '496 publication describes the conditions for the hydrogen plasma cleaning as from 1 mTorr to 10 Torr. '496 publication, ¶ 25. Thus, despite suggesting a broad range of pressures for the hydrogen plasma cleaning, Sharan only describes the narrower range of pressures from 1 to 5 Torr for the doping plasma. Applicants, therefore, submit that one of skill in the art would not be motivated to modify the teachings of Sharan because Sharan appears to have been aware of the possibility of using a wider pressure range but, instead, elected to describe the narrower range of 1-5 Torr. Thus, it appears that the Official Action gains its alleged impetus or suggestion to modify Sharan by hindsight reasoning informed by Applicants' disclosure, which, as noted above, is an inappropriate basis for combining references.

In light of the above discussion, Applicants submit that amended Claim 1 and the claims that depend from amended Claim 1 are not obvious in light of Sharan and, therefore, request withdrawal of the rejection of these claims.

Conclusion

In light of the above discussion, Applicants submit that the present application is in condition for allowance, which action is respectfully requested.

Respectfully submitted,

Timothy J. O'Sullivan
Registration No. 35,632

Myers Bigel Sibley & Sajovec, P.A.
P. O. Box 37428
Raleigh, North Carolina 27627
Telephone: (919) 854-1400
Facsimile: (919) 854-1401
Customer No. 20792

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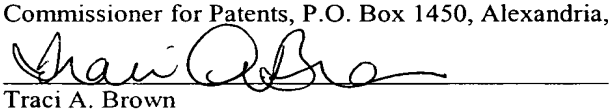

Traci A. Brown